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## ABSTRACT

Designed to enable elementary school teachers to introduce the study of technology to their students, this curriculum guide is divided into seven sections. Following the introduction, this guide includes a program rationale, curriculum goals, a model of the content structure of technology, an instructional format, and grade-level themes with suggested activities. The final section contains a series of twenty-one one-page examples of learning experiences. Each learning experience provides a learner competency statement, activities, resources, and evaluation activities. Appended material includes a list of representative technological concepts and elementary school technology program characteristics. (LRA)

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TECHNOLOGY EDUCATION CURRICULUM GUIDE

GRADES K-5

PADEN CITY ELEMENTARY SCHOOL

PADEN CITY, WEST VIRGINIA

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July, 1979

U.S. DEPARTMENT OF HEALTH,  
EDUCATION & WELFARE  
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## PREFACE

This elementary school curriculum guide is the result of a three year developmental effort 1976-1979, at the Paden City Elementary School. This document is provided to enable elementary school teachers to integrate the study of technology into their classrooms for the purpose of contributing to the development of student talent and understanding in the technology area.

Much appreciation is extended to the project teachers and their students who made a substantial contribution to the development of the program reflected in this document. It is also recognized that the project could not have succeeded without the support of the Wetzel County School Board, Superintendent George Johnson, and Principal Glenna McDougal.

The privilege of working toward the development of this program has been a rewarding experience for me. The opportunity is greatly appreciated.

Richard E. Peterson  
June 30, 1979

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## INTRODUCTION

This guide was developed to enable elementary school teachers to introduce the study of technology to their students. Elements of this document include a program rationale, curriculum goals, a model of the content structure of technology, an instructional format, grade level themes with suggested activities, and a series of one page examples of sample learning experiences.

This document provides a structure with representative activities to guide student experiences in technology. Teachers are encouraged to continuously add to the activities presented in this guide, and to modify and develop the activities according to the individual needs of their classes.

There are many opportunities to accomplish the goals of this curriculum within the context of the present elementary school curriculum. Mini-courses and regular classes such as social studies and science can often provide excellent opportunities to emphasize selected characteristics of technology, thus contributing to the accomplishment of curriculum goals.

It is hoped that the goals expressed in this curriculum document become an integral part of the existing elementary school curriculum. In this manner technological subject matter will be naturally recognized and presented as it is encountered.

It is also recommended that specific units emphasizing technology content be conducted in each elementary school classroom. Past experience indicates that the activities presented in this document have contributed to student development in the technology area, and have added to the vitality of classroom experience.

#### RATIONALE

Technology is a significant and vital part of the lives of all people, has been responsible for many lifestyle changes, and is an important phenomena to understand. Mass production, with its concomitant mass consumerism, has altered values, changed habits, and affected work environments. The invention and subsequent development of the automobile and airplane have changed our living patterns, and increased our mobility and the number of contacts that we have with other cultures of the world. The telephone, television, and other mass communication inventions have enabled people to "instantly" communicate with others all

over the world and have allowed "eyewitness" accounts of newsworthy events.

The technological achievements of humanity are numerous and many are awesome, with profound effects upon the world. The mounting influence of technology has led to the increased impact of technological change upon the lives of individuals and society. Concern is also evident that manifestations of technology, as embodied in the man-made environment, are increasingly coming into conflict with natural systems and, therefore, are interfering with life-sustaining systems and life quality.

In earlier times, little attention was paid to the impact of technology. Due to the small scale and low level of the technology employed, technological miscalculations were easily assimilated into the environment.

This relationship, however, is no longer acceptable. The attempts of humanity to gain an advantage over nature through technology have resulted in a power and force which rival nature itself. The impact of technology upon humanity has increased; we can ill afford to ignore the role that technology plays in the current dilemmas associated with overpopulation, food production, industrial production, et cetera. Technological systems

are essential to meet the needs of people, but much of our current technology is counter-productive in its appetite for energy, its depletion of non-renewable natural resources, its polluting effects, and the alienating and debilitating effects of some technological systems. It seems that we now possess the technology to destroy life itself, not only consciously through nuclear bombs and other instruments of warfare, but through unconscious efforts as well.

A broad understanding of the role that technology plays in our culture and the impact that it has upon people is essential if we are to manage our technology wisely. Elements of this understanding would include (1) experience with the technological process; (2) study of the role that technology has played in history and will play in the future; (3) assessment of selected technological issues; and (4) the study of technical elements which contribute to the effective functioning of an individual in our technological society.

This understanding of technology must be developed as an essential component of today's educated person---one who is prepared to fully function and participate in the decisions required of a citizen in a technological society. An educational curriculum based upon the relationship between technology, the environment, and

humanity can contribute to the development of people capable of effectively understanding, assessing, and managing our technology. A logical place to begin to develop this understanding of technology is in the elementary school through a technology based curriculum.

## CURRICULUM GOALS

The following ten curriculum goals constitute the thrust of this program in contributing to the development of individual potential within the technological domain of our culture.

1. The development of technological literacy-vocabulary and the ability to communicate (graphs, flow charts, PERT, visually, et cetera) and to develop a corresponding fluency in the understanding of technology.
2. The development of viable consumer skills--product testing, comparative analysis (children are definitely consumers as witnessed by the advertising aimed at the children's market).
3. The encouragement and support of recreational expression--effective use of leisure time and the development of a sense of recreation is an important goal of our program as a foundation for lifetime attitudes.
4. The facilitation of cultural efficiency within the technological domain of our culture--how things work, where they come from, and how they are used, constitute an important part of living in our culture. A technological competency facilitates efficient living in our culture.
5. The development of occupational awareness--recognition of the many diverse occupations in our culture and the interdependency our society has upon each occupation.
6. The realization of self--the impact of the technological process upon the individual impacts upon the individual to help the child to gain an identity and recognize talents/abilities, and realize potential and contributions to a positive self-concept.
7. The development of values to assess the appropriate use of our technology and resources--as a nation which consumes inordinate amounts of resources in our high technology systems (some of which are intrinsically dangerous, such as nuclear power), consideration of alternative value structures seems inevitable with regard to the future.
8. The recognition of technology and its effects upon the individual, society, and the environment.
9. The development of a time perspective continuum--the ability to learn from past ways of doing things and the effect upon previous culture; a sense of our contemporary culture and current issues; and the ability to project current trends.

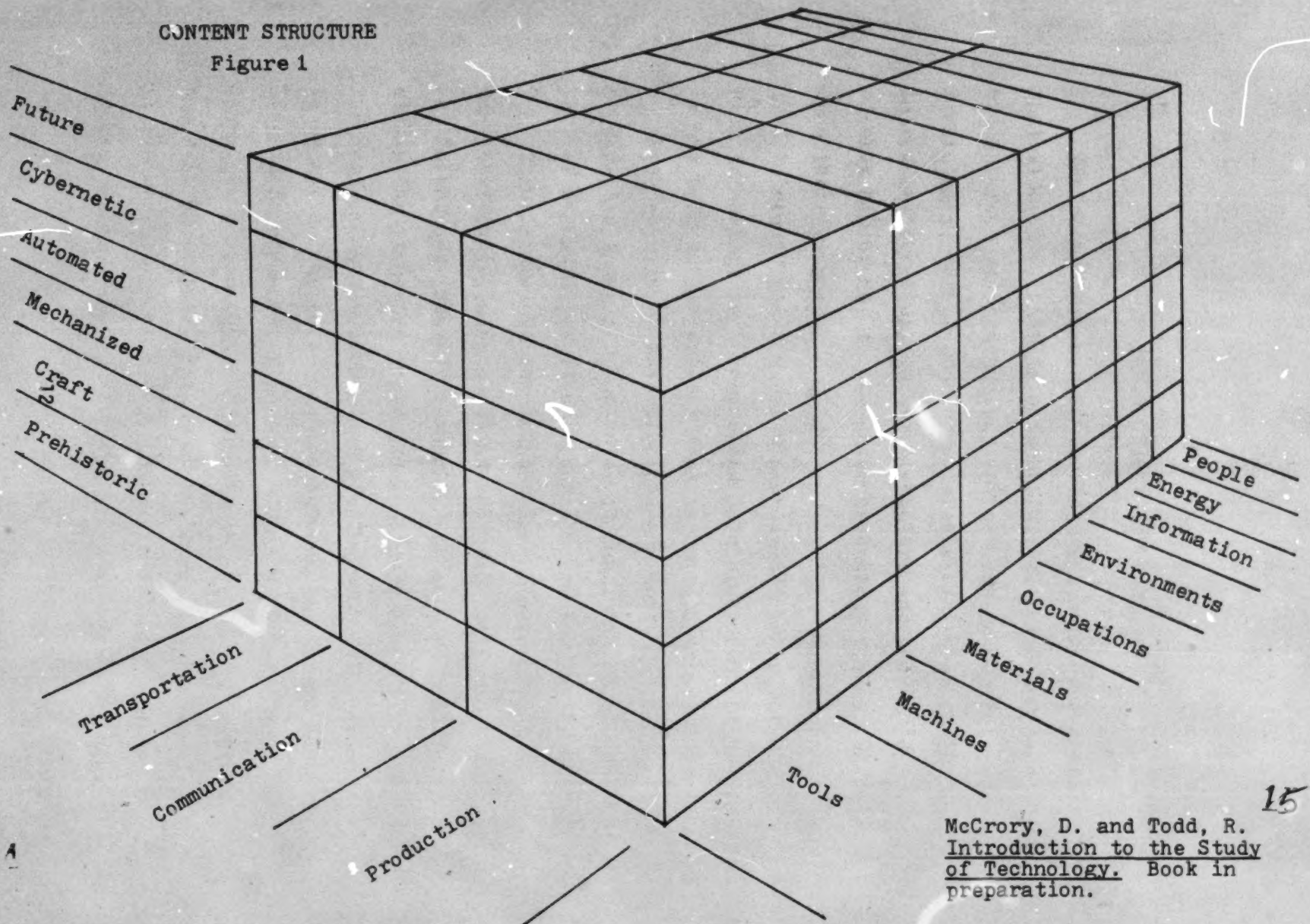
## CONTENT STRUCTURE

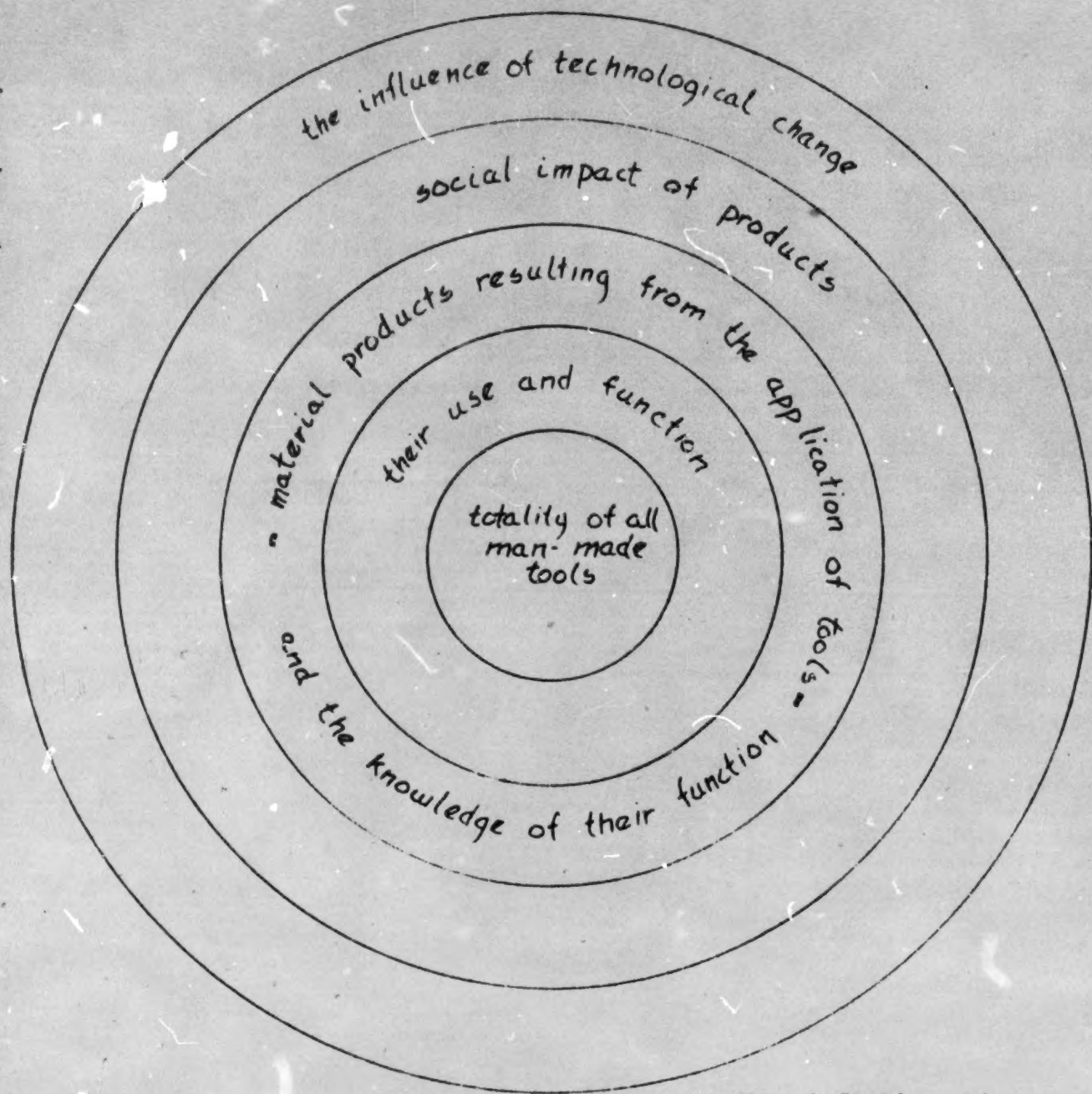
The content structure of this elementary school technology curriculum is developed from the discipline structure of technology as conceptualized in the model presented in figure 1. Three dimensions contribute to the development of an understanding of technology. In this model, technology has three elements---transportation, communication, and production. Each of these elements has many components and can be studied at several levels of development---prehistoric through future. For example, transportation systems can be studied at a given stage of development; from muscle power systems (human or animal), through mechanical, automated systems, et cetera. Each of these levels of development also has characteristic components; materials, machines, environments, and occupations et cetera.

It is recognized that the elementary school technology curriculum is interested in developing a broad general understanding of technology. Figure 2 presents the parameters of the study of technology in this curriculum---from the recognition of tools to the understanding of the influence of technological change upon our lives.

# CONTENT STRUCTURE

Figure 1





Henryk Skolimowski

FIVE DIMENSIONS OF THE STUDY OF TECHNOLOGY

Figure 2

## INSTRUCTIONAL METHOD

The elementary school technology program recognizes that kids, too, live in a technological world and experience and interact with technology in their own unique way. Accordingly, our program structures experiences which introduce technology to the elementary age child and enables him or her to recognize technology and its effects upon their lives.

Interdisciplinary units provide the means through which technology is incorporated into classroom activities. It has been our experience that technology can contribute in three ways to an interdisciplinary unit: it can provide the theme for the unit; it can function as one part of the unit; or it can lend its process to the unit.

Three steps are recommended in the development of the interdisciplinary units advocated in this program. (1) Select and identify technological content that falls within the structure presented in figure 1. (2) Develop the unit using the "curriculum webbing/sunburst" technique to establish the relationships between technology and other unit elements, figure 3. It is considered that the use of this technique contributes to the development of the full educational potential of technology based units in the elementary school. (3) Present the unit using a problem solving approach. Five steps are used in presenting

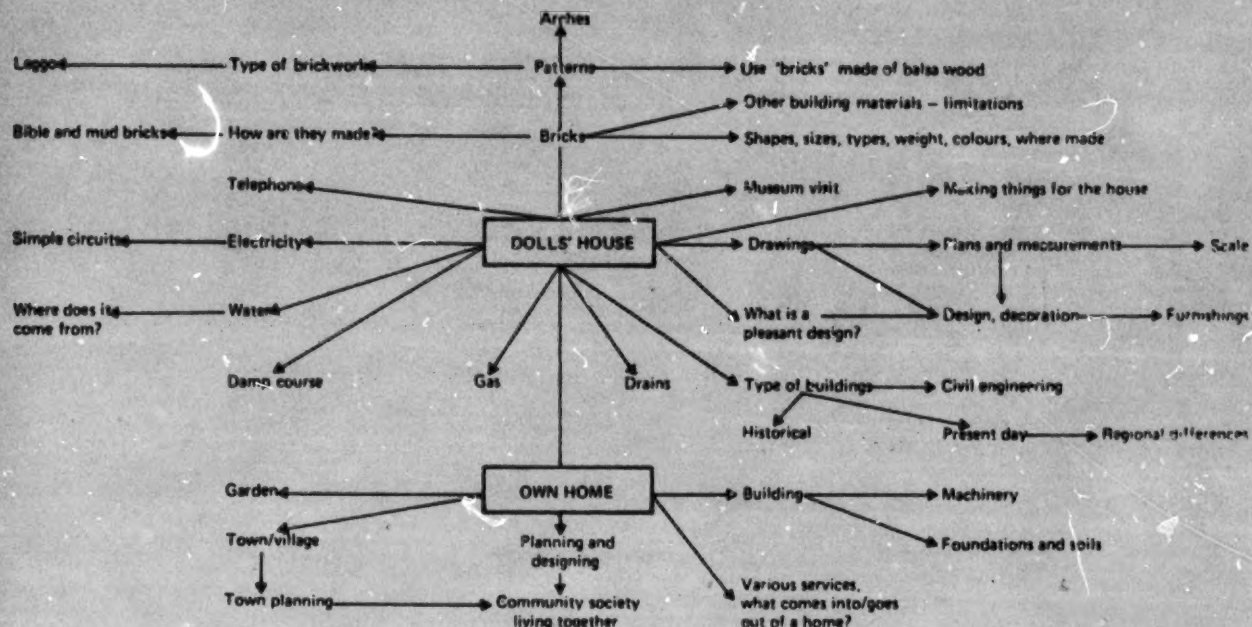


Chart of activities that arose in one school from a study of a dolls' house (age range 8½-10½)

### CURRICULUM WEBBING/SUNBURST TECHNIQUE

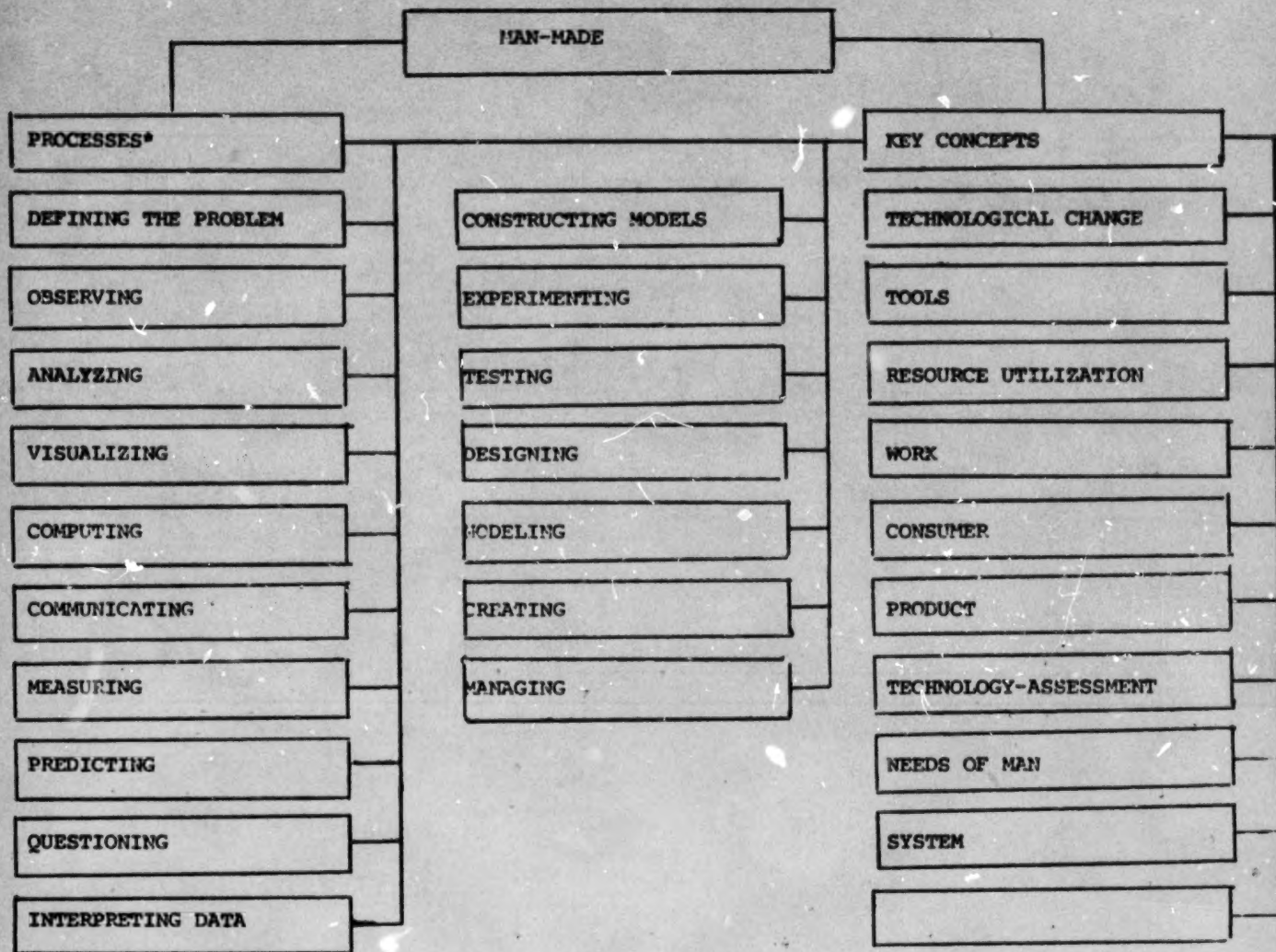
Figure 3

Science 5/13. New York:  
Macdonald Educational, 1972.

learning activities using this approach: define the problem; ideate (brainstorm); select a likely solution to the problem; implement the proposed solution; and evaluate the solution. Each of these steps may be repeated in a continuous cycle to develop the most appropriate solution to a particular problem. This approach allows the student to become involved in the learning process by applying their individual talents, and also encourages students to become responsible for evaluating their own progress, because it is clearly evident when a workable solution has been developed.

A practical approach which has proven useful in clarifying technological content to elementary teachers is the articulation of technological processes and concepts. Figure 4 and additional concepts listed in appendix A are provided for teachers as a resource to be used in the development of technology based units.

**SOME CONCEPTS AND PROCESSES  
REPRESENTATIVE OF THE STUDY OF TECHNOLOGY**



\*Halfin, Harold H. Technology: A Process Approach. Unpublished dissertation, West Virginia University, 1972.

Figure 4

## SUGGESTED GRADE LEVEL ACTIVITIES

The elementary school technology program is interdisciplinary in nature, harmonizing with the existing curriculum. It serves as a reinforcing, unifying, and integrating factor in augmenting the elementary school curriculum while providing the opportunity for students to apply knowledge gained in many subject areas in a functional manner. Curriculum content is selected from the discipline of technology and is blended with existing content themes according to student abilities, needs, and interests. The following activities are suggested as representative of appropriate grade level experiences.

ECE---Students listen to selected readings such as: Who Are the People in Your Neighborhood?, What Do People Do All Day?, and Things That Go. Students manipulate a wide variety of local materials while considering where they come from and how we use them.

1---Students identify and use common tools found in the home environment; telephone, typewriter, electric mixer, et cetera. Students plan and prepare a food recipe, and publish a collection of children's recipes.

2---Students identify the location of selected community resources and services, and prepare a map or directory of services that children use.

3---Students explore the ways in which mankind uses the environment and the interdependence of selected systems. Construction of a solar reflector, sun clock, et cetera, can be used to explain the workings of our solar system.

4---The adaptive systems of mankind and the material requirements for sustaining life are explored by students through role-playing the lifestyles of different cultures while considering the effects of various environments.

5---Students consider our technological heritage and the formative role it has played in shaping contemporary ways of doing things. Visiting museums and local historical sites, documenting the oral history of an industry, and constructing working models are some of the activities employed.

6---Students investigate the interface between man-made and natural environments. Students construct displays and model selected ways of processing natural resources; values related to the use and management of technology are considered.

## LEARNING EXPERIENCES

The learning experiences presented in this section constitute a representative base for the study of technology in the elementary school. It is recognized that teachers will want to adapt and modify these units according to individual class needs. It is recommended that new units be continuously developed and added using the structure provided in this guide.

LEARNING EXPERIENCE: Advertising

CONCEPTS: Market, Persuasion, Image, Sales.

LEARNER COMPETENCY: Develop verbal skills in the creation of advertising.

Recognition and evaluation of the effects of advertising.

Understanding of the motive force behind advertising.

Non-verbal advertising.

#### Activities

1. Create a bulletin board display of examples of advertising.
2. Act out television commercials--satire ...
3. Record your feelings when confronted by various advertising techniques.
4. Analyze advertising to understand how it works.
5. Create your own advertising and/or rewrite selected ads to make them ...
6. Contact a representative of the Better Business Bureau to discuss false advertising.
7. Arrange a visit from an advertising agency.
8. Establish criteria and select the "10 Best and 10 Worst Commercials."

#### Resources

1. Consumer groups.
2. Better Business Bureau.
3. Magazines.
4. Advertising Agencies.
5. Newspapers.
6. Catalogs.

#### Evaluation

1. Explain a recent experience with advertising and how it affected you.
2. Identify several commercials and explain what they are trying to accomplish.
3. Explain how you might identify deceptive advertising.

LEARNING EXPERIENCE: Case Study of a Product.

CONCEPTS: Product, Restoration, Preservation, Invention, Patent, Trademark.

LEARNER COMPETENCY: Experience in the investigation of the origin of a selected product.

An understanding of the social environment surrounding a particular product.

Estimate the time of manufacture of selected products.

Recognition of differences in ways of doing things between then and now.

#### Activities

1. Document information which is known--manufacturer, model number, patent number, other means of identification.

2. Write letters to potential sources of information; manufacturer, museums, ...

3. Restore/preserve--clean, take apart, paint, fix, put together.

4. Display before and after photographs, with information about the product and other products of the period.

5. File information with a local agency.

#### Resources

1. Thomas Register

2. Museums

3. Community

4. Periodicals of the time of manufacture.

5. Manufacturer.

#### Evaluation

1. Describe with illustrations how a product works.

2. Describe the historical setting in which the product was used.

3. Describe why you think the product was manufactured.

4. Would the product still be used today? What changes might have taken place in the design of the product?

LEARNING EXPERIENCE: Community Resource Guide

CONCEPTS: Community, Human Resources, Services, Interdependence, Guide.

LEARNER COMPETENCE: Identification of community resources.

Awareness of what is available in the community in the way of resources.

Social skills in contacting people to explain the services which their agency provides.

Communication skills in the publication of a directory.

### Activities

1. Identify and list community resources that students might use.
2. Develop a format to organize and present the information collected.
3. Have selected people visit the class and present information about the services they provide.
4. Publish a directory with information about local services.
5. Distribute the directory to selected people.

### Resources

1. Telephone Directory-Yellow Pages
2. Business Directories
3. Community
4. Public Agencies
5. Newspapers.

### Evaluation

1. Identify several community resources and how to apply for their services.
2. Explain how to use the directory to classmates.

LEARNING EXPERIENCE: Consumership/Product Testing

CONCEPTS: Consumership, Value (Economic, Nutritional, ...), Quality, Analysis.

LEARNER COMPETENCY: Exhibit consumer skills.

Recognize effects of advertising.

Collect and analyze data.

Publish and distribute product test results.

Identify consumer organizations.

Decision making skills.

#### Activities

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1. Identify products of which elementary school students are consumers. (cereal, junk food, magazines, toys, etc. ...)
2. Analyze advertising strategies used to market these products. (television, contests, gimmicks, prizes, celebrities, ...)
3. Test the products. (ex. cereal--test different brands for taste, nutritional value, economic value, etc. ...)
4. Contact consumer organizations for information.
5. Publish and distribute results.

#### Resources

1. Consumer Magazines- (analyze their format for possible use in the publishing of test results)
2. Consumer Organizations
3. Local newspaper.
4. Advertising agency.
5. Local companies.
6. Television.

#### Evaluation

1. Write a procedure concerning how to make a wise decision in selecting a product.
2. Select a product and analyze its quality.
3. Describe how advertising influences your behavior.
4. List several sources which could be consulted to evaluate the quality of a product.

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LEARNING EXPERIENCE: Document the oral history of a local industry.

CONCEPTS: Documenting, Investigating, Oral History, Industry.

LEARNER COMPETENCY: Research skills.

Communication skills involved in the interviewing of people and recording their comments.

Collecting and analyzing information.

Photography skills--documenting findings.

#### Activities

1. Identify local industries of historical significance which might be studied.
2. Interview selected individuals which have observed information related to the industry under study.
3. Record their observations.
4. Substantiate their experiences through local records, newspaper articles, photographs, and/or other oral accounts.
5. Photograph, measure, and record information about the physical site, assuming it is still in existence.
6. Document the findings in an appropriate manner--biography, slide show, play, documentary, narrative, ...

#### Resources

1. Old newspapers, magazines, photographs, recollections, of the time period under study.
2. Community volunteers.
3. Community records.
4. Local historical society.
5. Social studies text of industries which were prevalent during the time of study.
6. Memories ...
7. Foxfire

#### Evaluation

1. Have class present their findings to the people in the community who were helpful in providing their recollections.
2. Prepare a display of information collected.
3. Create a learning center in the library, school, or other public area, to communicate class findings.

LEARNING EXPERIENCE: Effect of the Train on the Life of Particular Individuals.

CONCEPTS: Technological Change, Levels of Technology, Culture, Transportation.

LEARNER COMPETENCY: Describe the environment of the Plains Indians.

Explain the level of technology employed by the Plains Indians and contrast this with the level of technology employed by the white man as exemplified by the railroad.

Characterize the effects of the train upon Indian culture.

Research, plan, and construct a platform village representative of the interface between Indian and white man technology.

#### Activities

1. Research the environment of the Plains Indians.
- 26 2. Research the history of the railroad in the U.S.
3. Plan a platform village and organize the class into groups to construct the project.
4. Write reports concerning the effect of the train upon Indian culture.
5. Solve construction problems of creating a lighted campfire and running water.

#### Resources

1. Man and Society
2. The Social Studies and Our Country
3. Media Center
4. Independent Study
5. Group Problem Solving

#### Evaluation

1. Research report.
2. Group participation.
3. Oral small group questions.

LEARNING EXPERIENCE: How Things Work.

CONCEPTS: Machine, Appliance, Tool, ...

LEARNER COMPETENCY: Identification of things we use daily.

Analysis of how common things work.

Describe the requirements of products.

How selected machines extend our physical abilities.

Knowledge required to operate selected machines.

#### Activities

- 27
1. Identify machines we use daily.
  2. Discover and analyze how and why selected machines work.
  3. Research why this particular device came into being.
  4. Describe life before the development of the product under study, and how its development changed things.
  5. Describe the knowledge required to build, operate, and maintain the product.

#### Resources

1. / How Things Work, Volumes I & II.
2. Eureka! An Illustrated History of Inventions. DeBono
3. Local community.
4. Britanica Junior
5. Childcraft.

#### Evaluation

1. Demonstrate the proper use of a particular product.
2. Draw a schematic which illustrates how a particular device works.
3. Take home quiz.

LEARNING EXPERIENCE: Human Body--Cardio-vascular System, Internal Organs.

CONCEPTS: Pump, Circulatory, Filter, System, Pressure, Valve.

LEARNER COMPETENCY: Describe the function of the heart, lungs, and kidneys.

Analyze the body as a system.

Develop a working model representative of the function: heart, lungs, and kidneys.

Test, develop, and trouble-shoot a prototype model.

Research bodily functions and present an informative kinetic display with a related tape recording explaining the display.

#### Activities

1. Research bodily functions.
2. Plan construction of a working model.
3. Design a display to present the information collected.
4. Trace a class member's body outline and identify the location of the organs studied.
5. Prepare a tape recording of information which correlates with the display.
6. Present the display to classmates in other grades.

#### Resources

1. Film--Hemo, The Magnificent. available Bell Telephone, Charleston (toll free number)
2. Concepts in Science-5
3. Rescue Squad
4. Local M.D.
5. Media Center

#### Evaluation

1. Pragmatic--does the model work?
2. Students will explain their findings to others.
- 3.

LEARNING EXPERIENCE: Identification of hazards in the home.

CONCEPTS: Safty, Haz ards, Preventive Maintenance, Precaution.

LEARNER COMPETENCY: The student will be able to identify potential hazzards in the home.

The student will prepare a plan of action to correct or eliminate potential hazzards.

Identification of sources of assistance for repair ...

Student will experience what is required to effect change.

#### Activities

1. Make "un-happy faces" which can be used to identify potential haz ards in the home.
2. Brainstorm potential hazzards in the home. What are some possible consequences of a lack of action?
3. Attach the "un-happy faces" to home haz ards.
4. Prepare a plan of action to correct the deficiencies.
5. Write a follow-up report.
6. Identify ways in which hazzards can be corrected. (perhaps demonstrate these-- ex. rewire a deffective lamp)

#### Resources

1. Local repairpersons.
2. Rescue Squad--identify common accidents in the home.
3. Safety films.
4. Accident statistics.
5. Repair manuals.

#### Evaluation

1. Check plans of action and follow up reports.
2. Identify a series of common ha zards.
3. Perform selected repair functions.

LEARNING EXPERIENCE: Indian Shelters.

CONCEPTS: Shelter, Construction, Man-made Environment, Material Properties.

LEARNER COMPETENCY: Describe the requirements of a shelter.

Identify building materials and their properties.

Experience problem-solving as it relates to the construction of a model Indian shelter.

Design and construct a model from a plan.

Research Indian shelters, methods of construction, and materials available.

Describe climate and topography as they related to shelters.

Activities

Resources.

Evaluation

1. Arrive at a group consensus through discussion concerning the requirements of a shelter.

2. Give examples of and have students experience the properties of materials suitable for construction.

3. Develop a plan with sketches of how a model Indian shelter could be constructed.

4. Discuss how shelters are related to climate and topography.

5. Construct and display the classes Indian shelters.

1. Mrs. McDougal

2. Man & Society.

3. The Golden Book of Indian Stamps.

4. The Social Studies and Our Country.

5. Media Center

6. Local collections of selected Indian artifacts.

1. Students will be able to describe selected Indian shelters with regard to construction techniques, materials used, and geographic location.

2. Students will be able to list the requirements of shelters.

LEARNING EXPERIENCE: Inventory of Industrial Sites/Products of Historical Interest

CONCEPTS: Industry, Historical Significance, Inventory, Oral History.

LEARNER COMPETENCY: Identify, observe, and collect data relating to local sites of historical significance.

Analyze and record the collect data in an organized form for present and future reference.

Register findings with a local historical society, public library, or other appropriate agency.

Maintain the file with periodic updates for future reference.

#### Activities

1. Invite a local historian to speak on information which is available and known about the topic under study.
2. Develop an objective of the study to guide the project.
3. Develop a search strategy.
4. Develop a format for the recording of information.
5. Utilize appropriate techniques in investigating, surveying, recording, and preserving industrial relics.
6. Communicate the results of the study through registration or publicity through the local newspaper etc..

#### Resources

1. Local Historical Society
2. Community
3. Elder members of the community--these people may be able to donate their time in a joint research effort with elementary age students.
4. County/City Clerk--local records.
5. Local companies--records, management, workers.
6. Old photographs, newspapers, letters, ...

#### Evaluation

1. Identify several sites of historical significance and describe their importance.
2. Describe the procedure used to collect the information found.
3. Compare the differences and similarities of the way things then, with the way things are done now.

LEARNING EXPERIENCE: Maps

CONCEPTS: Topography, Grid Systems, Scale.

LEARNING COMPETENCY: Locating features using a map. (map to feature/feature to map)

Identification of types of maps- road, topographical, political, etc.)

Utilization of scale relationships.

Identification of how people use maps and how they are made.

Activities

Resources

Evaluation

1. Using a map system, identify the location of student's homes- points of historical interest- prominent geographical features, etc..

2. Construct a topographical relief map to scale. (wet sand)

3. Using string, establish a grid structure on the relief map which can be used to identify selected features.

4. Construct a strata cube which represents two grid squares on the relief map.

5. Anticipate and solve construction problems.

6. Class presentation by a person who uses/makes maps. (ex. surveyor, truck driver )

1. Road maps.

2. U.S. Geological Survey Maps.

3. The Social Studies and Our Country.

4. Community Resources.

5. Concepts in Science.

6. Childcraft

1. Students will be able to plan a trip, locate features, using a map.

2. Recognition of people who use maps.

3. Demonstrate use of a map scale.

LEARNING EXPERIENCE: Music

CONCEPTS: Percussion, Sound, Frequency

LEARNER COMPETENCY: Self-expression through music.

Folk music.

Understand the transmission of sound.

Understand why different sounds are created.

Problem solving in the construction of musical instruments.

Participation in the creation of music.

Group play--working together in the production of music.

3

### Activities

1. Identify different types of music and musical instruments.
2. Discussion of entertainment value of music and the role it has played through history.
3. Analysis of different types of musical instruments and brainstorming session concerning materials which could be used to construct our own instruments.
4. Construct instruments.
5. Write and/or adapt music--form a ... and play!
6. Figure out why your instrument plays.

### Resources

1. Playbook- Steven Caney
2. Whole Cosmos Catalog of Science Activities
3. Project--magazine
4. Zoom Book.
5. Your imagination!!!
6. Media Center

### Evaluation

1. Play your instruments.
2. Listen to different types of music and identify each.
3. Describe how the instrument you made produces sound.

LEARNING EXPERIENCE: Newspaper.

CONCEPTS: Printing, Advertising, Reporting, Reproduction, Automation.

LEARNING COMPETENCY: Describe and select examples of different types of printing.

Identify steps involved in the printing of a newspaper.

Describe jobs involved in the production of a newspaper.

Analyze the effects of printing/newspapers upon society.

#### Activities

#### Resources

#### Evaluation

1. Discuss effects of printing.  
(ex. Xerox commercial- Monk/  
Miracle)

1. Local Newspaper.

1. Students will be able to  
describe the jobs, and steps  
involved in the production  
of a newspaper.

2. Activities involving  
selected writing techniques.  
(ex. cuneform, clay tablet,  
quill pen, brush, pencil,  
pen, etc.) (paper, also)

2. Childcraft.

2. Students will be able to  
understand the effects that  
a newspaper has upon society.

3. Printing involving three  
methods- mimeograph, relief,  
block, rubbings, nature prints.

3. Television News.

4. Tempra/crayon art activity.

5. Visit local newspaper.

6. Solicit advertising.

7. Organize production of news-  
paper in same manner as local  
paper.

8. Print and distribute paper.

LEARNING EXPERIENCE: Outer Space.

CONCEPTS: Rocket, Thrust, Law of Action/Reaction, Friction, Space Travel.

LEARNER COMPETENCY: Describe how a rocket works.

Analyze social effects of space program.

Life support systems required in space travel.

Research origins of developments in rockets.

### Activities

1. Research requirements of space travel and construct a model cardboard box space capsule. (take turns "living" in the environment, and write a narrative about the experience.)

2. Write to NASA for information concerning the space program and rockets.

3. Conduct experiments on how a rocket works--balloon rockets.

4. Race the rockets in teams and establish the winning team by measuring cumulative distance.

### Resources

1. Concepts in Science-5

2. NASA

3. Space-Age Spin-Offs

4. Child Craft

5. Local Model Rocketry Club

### Evaluation

1. Students will be able to draw a diagram, explaining how a rocket works.

2. Students can list several contemporary effects of the space program.

3. Students can explain the elements which are required to support human life.

LEARNING EXPERIENCE: Pollution

CONCEPTS: Pollution, Waste, Conservation, Disposal, By-products.

LEARNER COMPETENCY: The student will be able to explain some of the effects of pollution.

The student will be able to identify some local sources of pollution.

The student will be able to suggest some possible solutions to the pollution problem.

The student will be able to identify several causes of pollution.

Activities.

1. Identify local environments which have a pollution problem.
2. Suggest possible solutions. (ex. conduct a litter campaign, Clean up a problem which exists around the school ...)
3. Investigate local laws concerning pollution.
4. Contact pollution violators.
5. Conduct a publicity campaign.
6. Make posters, take photographs illustrating local pollution problems.
7. Contact various agencies to help you conduct tests of the environment. (EPA, water station, air quality control board.)

Resources

1. Whole Cosmos Catalog of Science Activities.
2. National Center for Resource Recovery
3. Sierra Club
4. Environmental Protection Agency
5. Water Company

Evaluation

1. Conduct a campaign publicizing a local pollution problem.
2. Identify several sources of pollution and suggest solutions.
3. Identify several effects of pollution.

LEARNING EXPERIENCE: Skeleton

CONCEPTS: Joints, Muscle, Bones, Lever, Structure.

LEARNER COMPETENCY: Identify the function of a skeleton.

How and why does a skeleton work?

Construct a model of a skeleton.

Activities

1. Research and group discussion of the function of a skeleton and why and how it works.
2. Construct a full-size representation or a model of a skeleton which explains how it works.
3. Identify things which we use which operate in a manner similar to a part of the skeletal structure. (hinge, ball joint, lever, etc. ...)

Resources

1. Science textbook.
2. Natural History Museum.
3. Local Doctor or medical personnel.
4. Media Center. (research)

Evaluation

1. Explain the models constructed to classmates.
2. List several products which work on the same principle as parts of the skeletal structure.
3. Identify the major parts of the skeletal structure and explain their function.

LEARNING EXPERIENCE: Solar System.

CONCEPTS: Solar, Systems, Orbits, Scale (size), Tools, Instruments.

LEARNER COMPETENCY: Identify relative size of the planets within our solar system.

Identify the relative distances between the planets of our solar system.

Identify and describe other systems. (characteristics)

Tools and instruments enable us to know more about our solar system. (identify/build)

Identify products which work on selected principles upon which our solar system is based. (example- time, clocks, calendars, gyroscope, satellites, etc.)

Investigate and describe the human requirements for space travel. (environments)

#### Activities

#### Resources

#### Evaluation

1. Construct a relative size, distance model of the solar system.

2. Discuss what constitutes a system.

3. Construct selected tools which amplify & extend our physical powers, enabling us to know more about our universe. (solar system)

4. Construct a bulletin board/display of products, how we use them, where they come from, & how they affect us.

5. Construct a space ship environment from boxes.

1. Concepts in Science.

2. Astronomy- A Golden Exploring Earth Book.

3. Latta's School Buyer's Guide. (catalog)

4. Childcraft.

5. Community...

6. Museums...

7. The Whole Cosmos. Abruscato, Goodyear Publishing Co. \$9.95

8. Space Age Spin-offs.

1. Given various sizes of round objects, student will be able to arrange them in size/distance relationship similar to the relationship of the planets to our solar system.

2. Students could write an extemporaneous theme on the life support environment required for space travel.

3. Students can list products and their effects: Spin-offs of the space program, selected instruments which can tell us about our solar system.

4. Students can recognize characteristics of a system.

LEARNING EXPERIENCE: Specifications of a Product.

CONCEPTS: Measurement, Specifications, Accuracy, Standardization, Recording.

LEARNER COMPETENCY: Describe a product through various measurements.

Understand selected drawing symbols.

Use selected measuring devices.

Communication skills--describing the salient features of a product through measurements instead of words.

#### Activities

1. Analyze the major features of the product which need to be described.
2. Review catalogs, instruction manuals, etc., and develop a suggested format for the reporting of specifications.
3. Measure.
4. Weigh.
5. Measure performance.
6. Identify the proper methods of utilizing the product.
7. Write a procedure/instruction manual.

#### Resources

1. Advertising
2. Catalogs
3. Instruction manuals
4. Measuring devices-rulers, tape measures, scales, squares, calipers, sliding T-bevel, level, protractor, ...
5. Drawing devices-T-square, triangles (adjustable), scales, board, drafting machine ...
6. Users of the product.

#### Evaluation

1. Do the specifications adequately describe the product?
2. Have a non-class member read the specifications and then describe the product.
3. Have a non-class member use the product according to the instructions given.

LEARNING EXPERIENCE: Weather Station--Ideas about the Weather.

CONCEPTS: Measurement, Prediction, Recording, Insulation.

LEARNER COMPETENCY: Construct various weather instruments.

Collect and analyze data.

Collect folk ideas about the weather.

Observe weather patterns.

Predict and hypothesize about weather conditions.

Read weather map.

#### Activities

1. Observe and record weather conditions for a period of time.
2. Listen to weather reports. (TV, radio, weather band radio)
3. Gather information from newspapers, write weather station, visit weather station, collect weather maps.
4. Operate a weather reporting service for the school.
5. Collect folk ideas about the weather.
6. Construct a weather station.

#### Resources

1. Foxfire I. (folk legends about the weather.)
2. Whole Cosmos of Science Activities.
3. Weather Bureau
4. Weather maps
5. TV, newspapers, ...
6. Childcraft
7. Weather--Experiments (Edison Institute, @ Henry Ford Museum, Dearborn, Michigan)

#### Evaluation

1. Using your weather prediction system, predict the weather for a given amount of time--record your accuracy.
2. Compare your accuracy with the weather experts.
3. Conduct a test of your own house for weather tightness. Prepare a plan to make it more energy efficient.

LEARNING EXPERIENCE: Write a History of the Origin of a Local Industry.

CONCEPTS: Business, Production, Capital, Stock, Manufacturing.

LEARNER COMPETENCY: Communication skills in using interview techniques.

Research skills in finding relevant information about a selected topic.

Understanding of change, through the comparason of past and present ways of doing things.

#### Activities

1. Identify several local industries-  
(do not limit the search to only  
those currently in operation.)

2. Contact people which might  
offer information and  
assistance.

3. Collect information--photographs,  
records, articles, make tape  
recordings, ...

4. Work with management, workers,  
etc., to construct an accurate  
history.

5. Verify and corroborate  
evidence.

6. Prepare a display.

7. Write a book, biography,  
evolution of a process, ...

#### Resources

1. Community

2. Library

3. Newspaper

4. Retired workers.

5. Local historical  
society.

6. Local records.

7. Competing or  
allied industries.

#### Evaluation

1. Have class-members describe  
the process they used to  
collect their information.

2. Identify several changes  
which have occured in the  
community.

3. Why was the industry  
founded on a particular site ?

## BIBLIOGRAPHY

- Koberg, Don and Jim Bagnell, The Universal Traveler.  
Los Altos, California: William Kaufmann, Inc.,  
1974.
- Peterson, Richard E., "Annual Report of Project Open,  
Paden City Elementary School, 1976-1977 Project  
Year." Morgantown, West Virginia: West Virginia  
University, June, 1977.
- Peterson, Richard E., "Annual Report on Projects Open:  
Paden City Elementary School, 1977-78." Morgantown,  
West Virginia: West Virginia University, July,  
1978.
- Peterson, Richard E., "Annual Report on Projects Open:  
Paden City Elementary School, 1978-79." Morgantown,  
West Virginia: West Virginia University, July,  
1979.
- Science 5/13. New York: Macdonald Educational, 1972.
- Scobey, Mary Margaret, Teaching Children about Technology.  
Bloomington, Illinois: McKnight and McKnight, 1968.
- Snyder, James, "Industrial Arts Curriculum Guide, K-4."  
Charleston, West Virginia: West Virginia Department  
of Education, 1979.

APPENDIX

## APPENDIX A

### "SOME CONCEPTS REPRESENTATIVE OF TECHNOLOGY CONTENT AT THE ELEMENTARY SCHOOL LEVEL"

Design  
Tool  
Technology  
Energy  
Environment: Natural  
                    Man-made  
Trade-Off  
Spaceship Earth  
Research & Development  
Handicraft System  
Resource Utilization  
Communication  
Production  
Recycling

Mass Production  
Technological Assessment  
Technological Change  
Artifacts  
Consumer  
Work:  
Adaptive Systems  
Shelter  
Product  
Industry  
Automation  
Invention  
Transportation  
Pollution

## APPENDIX B.

### CHARACTERISTICS OF THE ELEMENTARY SCHOOL TECHNOLOGY PROGRAM

1. Relates in a functional way information taught in all areas.
2. Utilizes the children's natural interests in activity, and in manipulating materials and devices as a means for expressing themselves.
3. Ties the curriculum together--provides a milieu in which the curriculum can function effectively.
4. Proceeds from specific/concrete to general/abstract.
5. Contribute to the development of potentials and abilities present within the elementary grade students in Wetzel County.
6. A viable, relevant curriculum which reflects the needs and interests of the students while developing requisite competencies for living in a technological environment.
7. Designed to integrate, unify, and reinforce existing curricular concepts through the technological aspect of our culture.
8. Implementation through existing elementary classroom teachers or a specialist.
9. Applications oriented curriculum with specific learning experience/lesson plans developed in the following areas:
  - Social Studies
  - Science
  - Math
  - English - Reading, Spelling
  - Music
  - Physical Education
  - Arts
  - Learning Disabilities
  - Multiple Handicapped
  - Interdisciplinary Studies - Team Teaching
10. Considered to have particular relevance in integrating community resources into the school environment.
11. An additional avenue for student excellence and success - provides natural feedback towards the realization of self.
12. Independent learning situations encouraged through learning centers in the classroom and resources available in the media center and community.